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ABSTRACT

An often-quoted Nigerian proverb holds that it is the responsibility of the whole village to teach a child. This paper argues that this goal might not even be possible, given the complex educational system of the 1990s. The paper provides a framework for effective change based on an understanding of the complexity of the educational system. It first looks at the call for change and reform and then discusses systematic change. Some of the aspects of systems theory are reviewed, including the implications of the systems approach for education. The final section discusses the importance of goals and socialization for the complex system of education. A conclusion is that lining up the elements in a planned intervention, based on a systems perspective, will increase the likelihood that the community will be focused on the education of every child. (Contains 24 references.) (LMI)

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A SYSTEMS APPROACH TO EDUCATION

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A systems approach to American education

An often quoted Nigerian proverb holds that it is the responsibility of the whole village to help teach a child. That philosophy is one to be greatly admired. It is even one that every education system should aspire to achieve. However, it may not take into full account how complex the American educational system has become. If only the most complex problems that confront the schools of the 1990's could be solved implementing the intent of this wise proverb. It would be great having every individual work toward and feel responsible for the education of each and every child. The sad truth is that this goal may not even be possible, but, even more important, the system has gone way beyond the scope of a village.

Even with radical changes in the United States education system little change will be effective unless there is a better understanding of the complexity of schools and the education process. In this article we attempt to provide a framework for effective change that is based on an understanding that the educational system is a complex system. First, we look at the

cry in the system. Then, we discuss systematic change and review some of the aspects of systems theory discussing the implications of that approach to education. Finally, we will discuss the importance of goals and socialization in this kind of approach to the very complex system of education.

The cry in the education system

Effective change in the American education system will need people who believe deeply the Nigerian proverb as attempts are made to improve schools. But more importantly, the change agents will have to understand how systems work and be adept at effectively moving the various factors of the system into play to have the desired effect of the citizens of a committed village all working together to help a child learn. This issue of change and complexity might be better understood though an example.

One of the authors was an administrator of an elementary school in the 1980's in which the population was approximately 85% students of color. In agreement with the board he worked hard to change the staff make up to reflect more closely the student population. Numerous teachers and staff were hired to move the teachers from 100% white to 75% and the staff from 85% to 40%. Meeting this goal proved difficult to achieve, and so risks were taken. In a few cases people without teaching certificates but with degrees were hired and variances from the

state was sought to give them time to receive their teaching credentials. Nonetheless, the goal to change the staff and teachers to reflect more accurately the student body composition was being attempted and there were measurable changes.

The reaction was initially favorable. However, after a short lapse of time the parents began to complain and to do so intensely. The most common complaint was that students were not learning as well because the new teachers did not speak English well or did not explain the material in a way the students and parents felt could be most easily understood. It was assumed that the change in staff would mean that the classroom would be run the same and nothing would change except the color of the skin of some of the employees. While the changes stayed in place for a few years it took much energy and was doomed to failure. The faculty and staff make up of that school slowly moved back to its previous composition. This failure can be understood as a lack of a systematic approach to change that would deal with the many factors that come into play when change is made in a system as complex as an educational institution.

In the aforementioned example, an action was implemented, however, the intervention did not hold and so the old norm swings back into existence. Slavin (1989) wrote that educators "must somehow stop the pendulum" (p.750). In this example, a much desired change was sought in a school. It was seen as good and held as a value. Yet, the change to have the teaching and school staff more closely mirror the student population did not remain a

focus as other issues became priorities (e.g. student success on assessments, traditional classroom presentation, certificate requirements, state regulations). The pendulum moving back and forth represents "shifts in taste and social climate and is not thought of as true progress" (Slavin, 1989, p.751). The educational system of the United States is very complex and many interventions have been attempted. Few seem to have not been undone and the result is not favorable. Some have stated that American education is a disaster (Smith, 1995). In the ABC News television show, Primetime (Gordon, 1992), a teacher was quoted as saying that the system was effectively in a meltdown. From many quarters can be heard the cry that education needs to be improved.

The call for change and reform is great and yet the history of effective change is poor. "Previous efforts have not made significant, lasting, improvements" (Deal, 1990, p.6). As Deal contends educators have spent millions of dollars, tried almost everything and the results are poor. When things do not work educators try another change and the pendulum swings back and forth producing ill feelings and providing the fodder for the statements often heard from veteran educators, "I remember when we tried this twenty years ago." The efforts of change seem to produce little improvement and have lead to radical actions by school districts. There has been a rise in charter schools, school boards hiring private corporations to run certain schools, even whole public school systems, and a move to hire

superintendents who are not educators. In an article in Newsweek, Hancock (1995) reports that major school districts-- Chicago, Boston, New York City, Minneapolis-St. Paul and Seattle have chosen non-education leaders and administrators. The new leaders are corporations, politicians, and even an ex-army general. This shift more likely reflects the frustration with the system rather than a desired move. The results of these recent changes will not be fully known for some time, however, Hancock (1995) reports, in discussing the Minneapolis school system, that "even after two years, there is little to indicate that the new way is a big improvement" (p.52). As Smith (1995) contends, the situation in the American education system is bad and calls for an understanding of systems.

Systematic change

One can view the problems of American education from either a reductionistic, piecemeal perspective, or from a more holistic, systematic orientation. The first approach attempts to isolate the problem as occurring in one small component of the entire process. For example, in the piecemeal approach, an innovator might seek to remove a certain teacher, to change a particular textbook, or to impose a new form of teaching. Such an approach was very prevalent during the past thirty years, a time of great turmoil in American education. Yet the main effect of these interventions was small at best, and typically the innovations

tended to cancel each other out or to fade from existence. Many change agents became frustrated and began to believe that changing the status quo in education was not possible. More intensely the failures have "left many schools empty and joyless places to work" (Deal, 1990, p.6).

There may be hope. Social scientists have come to take a different approach to the problems of American education (Scileppi, 1988, Patterson, 1993). They observe that education, similar to other institutions, can be viewed as a social system. A social system, according to Hearn (1969), is a set of elements together with the relationships between the elements. When people and material are brought together to achieve an organizational purpose, such as in schools, a system is created (Patterson, 1993).

To understand why various attempts at change in education have failed, we need first to understand the systems theory approach. The most basic concept of this approach is that no one element exists in a vacuum, but that each always relates to other components of the system. Thus, if one element is altered, the relationships between it and the other factors are potentially affected. This modification places stress on the entire system. If all the interrelated components can be made consistent with the reformed element, the change is accepted, the system restabilizes, and a type of synergy, or effectively directed smooth functioning of the system, results. Engineers have long known that in building a bridge, supports can be placed

in a number of ways, but if they are placed synergistically, the total support will be greater that the sum of each support. Similarly in a social system, if the factors that affect learning are connected and supporting each other the resulting effect will be greater than the sum of each factor separately. However, if the reform in one element of the system is inconsistent with all the other components of the system, the change is rejected as the system strives to regulate itself to reestablish a steady state following the disruption. This feature of social systems is often called equifinality (Hearn, 1969). That is, there is a tendency within a social system to produce identical results, even though some of the components within the system have been altered. Thus, a systems theory interpretation of the failure of educational reforms of the last few decades is that these reforms were piecemeal, and the change agents had not considered the effects their innovations would have on the other parts of the educational system.

For example, a teacher may have altered her teaching style to allow a greater degree of student freedom within the classroom. However, parents might complain that their children are not receiving regular homework assignments, other teachers might complain that their students are less obedient in class periods following the reformed class session, and perhaps the community might become annoyed at the drop in standardized test scores (as these tests were probably more consistent with the old teaching method), the students might complain that they no longer

know what is expected of them, and finally, administrators who might not appreciate the new method might penalize or fire the teacher. All in all, the innovation was probably doomed from the start, not because it was a non-productive idea, but because it did not use a systems theory approach. Because of the lack of synergy, this new teaching style reform would probably be short lived and the learning of students might actually decrease.

Goodlad (1984), following a similar perspective, noted that some controversial reform proposals, such as extending the school day or giving teachers merit pay, offer at best only a quick fix if these innovations are not incorporated into a total systematic reform of the schools. Merit pay is an idea that comes back into the public every few years. Slavin (1989) contends that the pendulum swings back and forth between ideas, approaches and strategies and that very few can be classified as effective. He, in particular, discusses the lack of evidence for the Madeline Hunter model. Districts and, as Slavin reports, entire states embraced this rather sequential and orderly instructional and supervisory approach as a means to improve student learning. They did so failing to understand that many more factors are at play in a classroom.

Systems analysis approach

To see how a systems theorist would design an intervention and plan for a more productive change in education, it is

necessary first to understand the social system analysis approach. First, systems analysis requires a mapping of elements and their interrelationships within the system. The mapping of elements can be accomplished by exploring the research related to the various factors that affect learning.

There are many elements that influence the learning of children in school. Boocock (1980) identified these levels of factors and the following list is indicative but not exhaustive of the factors involved:

1. the attributes of the individual child, such as family background, race, culture, gender, intelligence, achievement, motivation, personality, and learning style;
2. the qualities of the classroom, such as teacher expectancies, peer group influence, classroom climate, style of teaching and theories of learning;
3. the factors of the school itself, such as teacher-teacher and teacher-principal relationships, student-teacher ratio, availability of special services personnel(e.g. nurse, counselor, special teachers, aides, speech therapists),the school climate and environment, and even the type and quality of facilities in the school;
4. the interface between the school and the community, such as the composition of the school board, the nature of parental and volunteer involvement in the school, the involvement of businesses, the teacher union, and the degree of diversity within the community; and

5. the forces operating at the level of the state and national educational system, such as the effect of mass media on the popular image of what quality education means, national legislation affecting education, state and national policy regarding funding and requirements,and the types of learning resources distributed by the major publishing, software, and technology businesses.

This example of levels of factors influencing learning makes clear that the educational system has increasing levels of complexity beginning with the individual learner and expanding to include national influences. Therefore, looking at the interplay of the factors and understanding that the educational enterprise works as a system seems most useful in developing effective change.

This position is not shared by all. Smith (1995) contends that referring to education as a "system" is a misnomer because system implies an organism that is "organized, integrated, orderly, predictable and functional" (p.587). He contends that education is disorganized, disorderly, unplanned and even perhaps dysfunctional. Nonetheless to be an effective change agent in this disaster (as Smith views education), it will help if one can conceptualize all the factors operating at each level and their interactions within those levels, and then explore the relationships, albeit even dysfunctional relationships, among

levels of factors. This would be done in the hope that the factors would all be supporting the learning process by all pulling in the same direction.

Perhaps a better metaphor for an effectively functioning school is that all the factors join together and create a new choreographed dance that would support the goal. Whether it is a line of factors all working together to reach a goal or the many factors working together to create a new dream and dance, the change agent's ability to be effective is housed in understanding the nature of systems. In a previously discussed example the intervention to have the faculty and staff more accurately reflect the student racial makeup was disappointing, in part, because all the factors that might come into play were not understood, nor addressed. While a staff that reflected the student population was a respected goal, other factors, goals, and priorities were in conflict and so the goal was not held. And so, it is possible that the first intervention proposed by a change agent might be to encourage all elements to be named in an attempt to have them line up synergistically to create a planned system, or at least to know who is in the dance.

The systems analyst depends heavily on the empirical research describing the influence of each factor on learning. While there has been extensive "linear" research (i.e., the effect of a single factor on learning), there is far less research of a more systematic nature (Senge, 1990, O'Neil, 1995). That is, ecological research assessing the contextual

relationship or pattern of factors embedded in larger or more complex conceptualizations of the system, and definitive research involving the effects of many factors simultaneously are greatly needed (Scileppi,1988, Fullan, 1995). Sizer (1985) noted, for example, that each component of a school's operation is connected with every other one, and thus, any conceptualization which does not consider the pattern of factors is incomplete and distorting. Ten years later, in an interview, Sizer re-iterated this need (O'Neil, 1995). While discussions have increased related to systems analysis (Summers and Wolfe, 1975, Deal, 1990, Fullan, 1995, Senge, 1995, O'Neil, 1995), far more research must be conducted for us to understand fully education as a system.

Educational goals

The second task of the systems analyst is to understand the goals of the system and to determine who makes which critical decisions regarding educational policy and practice. All systems have goals; some are expressed and others are less overt. Yet the elements of all social systems are designed to further these goals.

There are many ways to conceptualize the goals of a social system. The first way is to divide the goals into two general types: system maintenance and task productivity (Johnson, 1970). System maintenance refers to the value placed on perpetuating the institution. If too much emphasis is placed on this goal,

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less system energy is available for the system to perform its function for the society in which the system is embedded. If system maintenance is given too little emphasis, the institution may de-stabilize and disappear.

Task productivity, the second type of goal, is the work of a system in achieving its purpose. The task productivity goals of the educational system have been a source of controversy in recent years. Numerous authors have attempted to persuade society to adopt diverse views of what is good education. Changing the values and goals upon which a system rests has a great influence on the structure and processes of that system. Some social scientists, such as Bateson (1972) and Watzlawick et al (1974), believed that altering the goals of a system such as education results in true social change, as the rules of the institution change with each goal change. They distinguish between first order change, which is merely innovation without change, such as the example of altering a teaching method while keeping the remainder of the system intact, and true second order change which alters the basic fabric and purpose of the system. By changing the goals, all the elements of the system are readjusted and the thermostat governing the operation of the system is reset to monitor different outputs of the institution.

Modifying the goals of the system is not easy, but it is also not impossible. In education, such change requires convincing all the major decision makers within the school system that the change in emphasis is desirable. Also, the change

agent must persuade parents, students, and others in the local community that these changes will benefit themselves, as society needs to have graduates with certain qualities. Finally, the interventionist must convince the forces within the national educational system, such as the mass media, testing corporations, textbook publishers, government legislators, and funding sources, of the value of the change.

This process of changing values and goals, whether intentional or not, occurred in 1983 with Secretary of Education Bell's report, "A Nation at Risk." It sounded an alarm that had been building during the late 1970's that seems to have been a back lash to the trends of the time. After a period of recognizing a need for more creative, self-disciplined students who were encouraged to participate in designing their own educational curriculum, society began to perceive a need for educators to return to basic academic skills. The mass media began to preach that the major problem in American education was not a lack of freedom in the classroom but rather that students were falling behind in the basic writing, reading, and arithmetic skills. State governments began to establish norms in these academic areas that the graduates of each school had to meet in order to maintain state funding. Testing firms began to alter the relative production of the types of testing instruments away from measures of creativity and toward monitoring the basics. Parents started to demand that teachers assign more homework in the basic areas. Businesses complained that high school

graduates needed to be trained extensively in the ability to read work manuals and follow written instructions. At all levels of the system, educators were being pressured to move "back to the basics", and slowly but consistently the system changed and innovations furthering this movement were encouraged. The swing in goals seems cyclical but demonstrates the importance of goals in an educational system. In very few systems would the goals change so radically.

The role of goals in a systems analysis is critical. The system uses its goals as a basis for assessing its performance. This process describes another aspect of systems. That is, a system seeks feedback on the quality of its functioning. For example, if society requires that high school graduates are competent in basic academic skills, then schools are going to place great emphasis on standardized achievement tests in these fields. Decisions regarding teaching methodology will be based on the degree to which the new method will produce students who score high on these tests. If, on the other hand, society indicates that schools are to produce open minded, non-prejudiced graduates who desire to celebrate cultural differences, other types of attitudinal, behavioral, and cultural information tests will be created to assess these graduates, and schools will modify their teaching methods and curriculum to enhance the probability that their graduates will succeed on these measures. Thus, change will result by analyzing and altering the goals of education and then by bonding specific innovations and assessment

instruments to these goals.

There is obviously much controversy over educational goals. The issue of what goals are appropriate for the educational system has been a political controversy for some time. Various commissions and many educational professionals have attempted to formulate and to promulgate their positions on these issues. In 1918, a national commission on education established the "Seven Cardinal Principles" as the goals of education. These goals included health, command of fundamental processes, worthy home membership, vocational training, citizenship, worthy use of leisure time, and ethical characteristics. These goals which seem influenced by Dewey (1916) stress process, citizenship and the commitment to the student's needs and experience. This "progressive" view of educational goals has been at odds with the "back to basics" goals periodically restated. These goals emphasize the basic content areas of math, reading and science often de-emphasizing the progressive goals. These goals have been given recent momentum by the Nation at Risk Report of 1983.

Forums of national leaders have been called together to review goals. Various foundations and groups of professionals are hard at work creating their own set of stated goals. Curriculum/content groups have been working for years to reframe curriculum objectives based on their perceived goals. The New Math standards were one of the first and they focus on the process of understanding math, seeking to create environments

that would promote thinking and problem solving. While many content groups are working on standards, there are really no overarching goals for the entire system. Lazotte (1991) has suggested that the 90's will be known in history as the decade of curriculum wars. Each of the many curriculum areas have their own goals, objectives, and learning approaches. In addition, they seem to be trying to establish the system's goals, or at least to have the system's goals include their agenda. That the objectives are growing and are not often interrelated and sometimes are in conflict causes problems.

The content area experts have their agenda for educational goals. Various groups (e.g. single parents, AIDS education advocates, family value advocates, health issue groups, particular ethnic groups, religious groups, etc.) in society want to have influence as well. In addition, there are major conflicting views. As was mentioned earlier, some in society are calling for a "back to basics" approach which urges schools to utilize all class time to teach cognitive learning and knowledge. Others believe schools should foster student's personal development, self-awareness and confidence. Some see the school as the agency for helping the integration of all ethnic groups and to celebrate cultural differences. Finally, many see the goals of education as preparing students to work and to be vocationally competent citizens in an emerging global market (Scileppi,1988). The national government recently passed the new Goals 2000 intended to articulate the goals for the

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entire education system. While attempting to combine the various factions, Goals 2000 seems focused on the basics and the needs of the work place. Like all the various views this set of goals has stimulated discussions and arguments.

There are many views of education. These are only a few of the positions regarding the goals of education. As society changes, different perspectives will evolve and become a priority. One of the roles of a change agent in education is to analyze the goal structure of schools and then to modify the goals to enable specific interventions to succeed.

In addition, the change agent might find that within a school system, the administrators and staff do not have a clear or unified perspective regarding educational goals. In such a situation, decisions regarding teaching methods and the need for specific resources are often inconsistent. This reduces the total synergy of the system and student learning is adversely affected. Apparently, this lack of agreement regarding goals is fairly widespread. Goodlad (1984), in an eight year long study of 38 schools in 13 communities, found that state education officials and school administrators were often ambivalent about the goals for the schools under their jurisdiction. The change agent can create meaningful change in such situations by making the staff more aware of the lack of consensus and its effect on students' learning, and then persuading them to accept a specific educational philosophy.

A final consideration concerning goals is not explicitly

expressed by the school. In most educational systems there are covert purposes, sometimes called the "hidden curriculum." For example, aside from the more noble goals of teaching the child to learn to read and write and be a good citizen, schools also serve as a means of preventing children and young adolescents from flooding the work force. They act as gate keepers and help provide a steady stream of new employees. In addition, schools often teach (or perhaps preach) a specific value or ideology. One such nonexpressed ideology is the belief that children have fewer rights than adults. Philip Jackson (1968) discussed life in classrooms, and he compared the conditions under which students are expected to learn to the typical adult work setting. Jackson described, for example, that approximately 30 students are required to sit in specific seats for long periods of time. They can speak only under certain conditions, and they are expected to obey every order of the teacher. If this situation occurred in a unionized factory, the workers would surely strike. Finally, a purpose of schools not often expressed openly is to provide jobs for teachers and administrators. All these hidden goals affect educational structure and practices, and thus, they also need to be understood in order to fully conceptualize the purposes of the educational system. Just as a social system uses its expressed goals for measuring performance, the institution will often informally monitor these hidden criteria when evaluating its policies and procedures or the merit of new ideas for change.

Socialization

A final overriding concept about goals is that they (like all components of a social system) are embedded in a larger societal perspective. Each individual and each subculture has a viewpoint on how a child is socialized into a culture.

Zigler and Child (1969) have presented two opposing views as to the child's participation in the socialization process. These two positions define the endpoints of a continuum of possible approaches to the issue. As education is at least partially a socialization attempt, the goals we choose for education will relate, intentionally or not, to the socialization issue. Zigler and Child described the two views as positive and negative. These terms refer to the perceived degree to which the child helps or hinders the socialization process. The negative view is similar to the theories of Calvin and Freud, and reflect the viewpoint of the book, Lord of the Flies (Golding, 1978). This view holds that our basic nature is evil, and a person is essentially selfish, being motivated only by biological and antisocial drives. The only innate goal state is hedonism, and involves the reduction of the tension of these drives. The positive view, on the other hand, is similar to the views of Rousseau, Dewey, and Rogers. In this view, the person's basic nature is good and the child is essentially sympathetic, being motivated by social interest. Our goal would include the

production or creation of something, and the achievement of self- actualization or of one's existential project.

In the negative view, according to Zigler and Child (1969), the task of socialization is rather difficult, as the socializing agent must counter the child's innate destructive desire. The child must be curbed; his or her biological drives must be bridled and channeled into the needs and values of society. Drive reduction must be prevented or curtailed in the interests of society, and the socializing agent must impose a strict conformity on the child.

In the positive view, Zigler and Child (1969) hold that the task of socialization is an easier process, as the child desires to become a productive member of society. The child is perceived as being socially motivated and to be deficient only in the knowledge of the proper behavior allowed in a particular culture. The child is not to be imposed upon but is encouraged to be self-directed, as the child's own unique personality and sense of purpose in life must be allowed to develop unencumbered by others. The child seeks many diverse adult models and chooses the ones which relate most closely to the child's own individual life ethic.

While few educators accept either extreme view, there are a great variety of positions held by members of society who have impact on educational practice. The type of traditional classroom structure described earlier by Philip Jackson seems to take the more negative view, whereas the supporters of the

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more free-style open classroom agree more with the positive view of socialization. Perhaps many of the controversies regarding which goals are appropriate for education might be understood in light of this socialization issue.

Conclusion

Views of socialization, goals of education, regulations, practices and activities within the community, school and classroom, outcomes assessments and personal/family values and beliefs interrelate in the total educational system. Unfortunately, the various elements of the system are not always consistent with each other. This dissipates the energy available to help children learn. Lining up the elements in a planned intervention, conceptualized from a systems perspective will increase the likelihood that the community will be focussed on educating each child. If the elements are working together then, perhaps the Nigerian proverb that it takes a whole village to educate a child would be a reasonable hope.

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